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EXAMINER

KIM, CHONG R

ART UNIT PAPER NUMBER

2623

DATE MAILED: 07/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/719,430

Applicant(s)

SMITH, JOSHUA R.

Examiner

Charles Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-83 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 58, 61 and 67 is/are allowed.
- 6) ☒ Claim(s) 1-57, 59, 60, 62, 63, 65, 66 and 68-83 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment and Arguments

1. Applicant's amendment filed on February 9, 2005 has been entered and made of record.
2. Applicant's arguments have been fully considered, but they are not deemed to be persuasive for at least the following reasons.

Applicants argue (pages 17-18) that their claimed invention differs from the prior art because "there is no teaching to combine the two systems, which are directed to scanning different features of documents, i.e., printed patterns versus the surface topology of an unprinted area, for different purposes, i.e., recognition versus authentication." The Examiner disagrees. Kariakin and Raterman are considered analogous art because both references are concerned with optically scanning a workpiece (monetary bill) by illuminating the bill with electromagnetic radiation, wherein the illumination reflected off the bill is detected to image the features on the surface of the bill. Kariakin's system recognizes whether or not the bill is authentic, and Raterman's system recognizes the denomination of the bill; both systems perform recognition on a monetary bill. Furthermore, both references have the same objective--to image the features on the surface of the bill.

Applicants further argue (page 19) that "there is no teaching or suggestion in either Raterman or Kariakin to combine with the Kariakin system the relatively complex scan head of the Raterman system." The Examiner responds by pointing out that the combination of Kariakin and Raterman resulted in the modification of Kariakin's scan head to illuminate the workpiece simultaneously from different illumination positions, as discussed on page 4 of the previous

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office action. The combination was not interpreted to replace the scan head in Kariakin's system head with the scan head of Raterman, nor was the combination interpreted to include the scan heads from both Kariakin and Raterman's system. Note that the Raterman reference was relied upon to teach the concept of simultaneously illuminating a workpiece from different illumination positions during optical scanning. The Examiner notes that the suggestion/motivation for the combination would have been to provide an increased signal level as a result of the simultaneous illumination, thereby enhancing the detectability of the surface features on the bill. Therefore, it would have been obvious to modify Kariakin's scan head in view of Raterman's teachings.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 7-11, 13, 14, 21-25, 27, 42, 49-53, 55, 68, 69, 71, 72, 73, 75, 77, 79, 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kariakin, PCT Publication No. WO 97/24699 ("Kariakin") and Raterman et al., U.S. Patent No. 5,295,196 ("Raterman").

Referring to claim 1, Kariakin discloses an indicium for placement on a workpiece for use in determining whether the workpiece is valid, comprising:

a set of one or more markings corresponding to a string that is based upon, at least in part intrinsic physical characteristics (micro-topography) of at least one portion of the workpiece (page 2, line 17-page 3, line 12), the physical characteristics including one or more images of surface topographical appearance of the at least one portion of the workpiece resulting when the at least one portion of the workpiece is illuminated with electromagnetic radiation from different illumination positions relative to the at least one portion (page 3, lines 14-28).

Kariakin discloses an optical scan head (132) for illuminating the at least one portion from different illumination positions (figure 13), but fails to explicitly disclose that the at least one portion is illuminated with radiation simultaneously from the different illumination positions.

Rateman discloses an optical scan head (18) that is capable of illuminating a workpiece with radiation simultaneously from different illumination positions (col. 4, lines 7-16 and figure 1).

Kariakin and Rateman are both concerned with discriminating a workpiece by performing optical scanning. Rateman provides an improved optical scanning system that is compact and economical, and performs at a high speed with a high degree of accuracy (Rateman, col. 2, lines 35-55). Therefore, it would have been obvious to modify the optical scan head of Kariakin so that it is capable of illuminating an object with radiation simultaneously from different illumination positions, as taught by Rateman, in order to increase the speed and accuracy of the scanning process.

Referring to claim 2, Kariakin further discloses that the one or more markings comprises a barcode (page 5, lines 28-30).

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Referring to claim 7, Kariakin further discloses that the different positions are at respective different oblique angles, and an identical azimuthal angle, relative to the at least one portion of the workpiece (page 20, lines 13-21 and figure 13).

Referring to claim 8, Kariakin and Raterman do not explicitly disclose that the different positions are at respective different azimuthal angles, and an identical oblique angle, relative to the at least one portion of the workpiece. However, the Examiner notes that this would have been an obvious feature in order to illuminate the portion of the workpiece in a thorough manner, thereby obtaining an accurate image of topological surface.

Referring to claim 9, Kariakin further discloses that a portion of the radiation is reflected from the at least one portion at an angle that is normal to a surface of the at least one portion, and the one or more images are generated from the portion of the radiation (page 23, lines 9-24).

Referring to claim 10, Kariakin further discloses that the radiation comprises coherent light (page 20, lines 13-21).

Referring to claim 11, Kariakin further discloses that the at least one portion comprises a plurality of portions of the workpiece (page 15, lines 20-24).

Referring to claim 13, Kariakin further discloses that the string is based upon, at least in part, differences between selected images (page 3, lines 30-37).

Referring to claim 14, see the rejection of at least claim 1 above.

Referring to claims 21, 49, see the rejection of at least claim 7 above.

Referring to claims 22, 50, see the rejection of at least claim 8 above.

Referring to claims 23, 51, see the rejection of at least claim 9 above.

Referring to claims 24, 52, see the rejection of at least claim 10 above.

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Referring to claims 25, 53, see the rejection of at least claim 11 above.

Referring to claims 27, 55, see the rejection of at least claim 13 above.

Referring to claim 42, see the rejection of at least claim 14 above.

Referring to claim 68, Kariakin further discloses that the one or more images are generated using at least a single photosensing element (page 20, line 23).

Referring to claims 69, 71, see the rejection of at least claim 68 above.

Referring to claim 72, Kariakin further discloses that the indicium uniquely identifies the workpiece (page 2, line 35-page 3, line 12 and page 27, lines 14-31).

Referring to claims 73, 75, see the rejection of at least claim 72 above.

Referring to claim 77, Kariakin further discloses that the string is based, at least in part, upon a calculation of principal components of the one or more images (page 20, line 23-page 21, line 6. Note that the vectors "L*" are interpreted as the principal components, since they are the resulting components that are obtained after the redundancy reduction process).

Referring to claims 79, 83, see the rejection of at least claim 77 above.

4. Claims 3-5, 15-19, 43-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kariakin, PCT Publication No. WO 97/24699 ("Kariakin") and Raterman et al., U.S. Patent No. 5,295,196 ("Raterman"), further in view of Sansone, EP 0878778 A2 ("Sansone").

Referring to claim 3, Kariakin explains that the workpiece can comprise a document such as a bank note or other security item (page 5, lines 16-17). Kariakin and Raterman both fail to explicitly disclose that the workpiece can comprise a postal mailpiece. However, the Examiner

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notes that the specific type of workpiece is not considered a patentable distinction. As noted above, Kariakin explains that a variety of workpieces can be used in his authentication system. Therefore, the specific type of workpiece used would have been chosen by the user during experimentation to meet his/her specific requirements.

Furthermore, workpieces that comprise a postal mailpiece were exceedingly well known in the art. For example, Sansone discloses a workpiece that comprises a postal mailpiece (figure 1).

Kariakin, Raterman, and Sansone are all concerned with discriminating a workpiece. Therefore, it would have been obvious to modify the workpiece of Kariakin and Raterman, so that it is a postal mailpiece, as taught by Sansone, in order to increase the flexibility of the system.

Referring to claim 4, Kariakin and Raterman both fail to explicitly disclose that the string is representative of a postage value associated with a mailpiece, if the workpiece is valid. However, Kariakin explains that the string is a unique characteristic of the document (page 2, line 35-page 3, line 5).

Sansone teaches a workpiece that comprises a postal mailpiece, as noted above. Sansone further explains that a postage value can be considered a characteristic of the mailpiece document (col. 3, line 50-col. 4, line 5). Therefore, it would have been obvious to modify the string of Kariakin and Raterman so that it is also representative of a postage value associated with a mailpiece, as taught by Sansone, in order to provide further distinguishable characteristics of the workpiece for generating the indicium (Kariakin, page 2, line 37-page 3, line 1), thereby enhancing the validation process.

Referring to claim 5, Sansone further discloses that an indicium is imprinted on the mailpiece by an apparatus (postal security device) [col. 4, lines 4-12]. Sansone also explains that the indicium comprises a string that identifies the apparatus (col. 4, lines 4-12. Note that the indicia 23 includes the serial number of the postal security device that imprinted the indicia).

Referring to claim 15, Kariakin explains that the certifying signature is obtained by encrypting the string with a secret cryptographic key (d) (page 16, lines 1-20). Kariakin and Raterman both fail to explicitly disclose that the signature is from a certifying authority (CA). However, the Examiner notes that signatures from a certifying authority were exceedingly well known in the art. For example, Sansone teaches a signature from a certifying authority (col. 5, lines 15-38).

Kariakin, Raterman, and Sansone are all concerned with discriminating a workpiece. Sansone's method improves the validation process by providing a signature that is from a known certifying authority. Therefore, it would have been obvious to modify the signature of Kariakin and Raterman so that it is from a certifying authority, as taught by Sansone, in order to enhance the validation process.

Referring to claims 16, 44, see the discussion of at least claim 2 above.

Referring to claims 17, 45, see the rejection of at least claim 3 above.

Referring to claims 18, 46, see the rejection of at least claim 4 above.

Referring to claims 19, 47, see the rejection of at least claim 5 above.

Referring to claim 43, see the rejection of at least claim 15 above.

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5. Claims 6, 20, 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kariakin, PCT Publication No. WO 97/24699 (“Kariakin”) and Raterman et al., U.S. Patent No. 5,295,196 (“Raterman”), in view of Sansone, EP 0878778 A2 (“Sansone”), further in view of the article entitled “A Robust Content Based Digital Signature for Image Authentication” by Schneider et al. (“Schneider”).

Referring to claim 6, Kariakin, Raterman, and Sansone teach a string based upon respective numerical values representative of the physical characteristic of the workpiece, the postage value, and an identification value identifying the apparatus, as noted above.

However, Kariakin, Raterman, and Sansone fail to explicitly disclose one or more hash values representative of the physical characteristics of the workpiece.

The Examiner notes that hash values were exceedingly well known in the art. For example, Schneider discloses one or more hash values representative of a characteristic (image) [page 228].

Kariakin, Raterman, Sansone, and Schneider are all concerned with validating a workpiece. Schneider explains that the use of hash values increases the flexibility of the verification process (Schneider, page 230, right column). Therefore, it would have been obvious to modify the string of Kariakin, Raterman, and Sansone, so that it includes the one or more hash values of Schneider, in order to increase the flexibility of the verification process.

Referring to claims 20, 48, see the rejection of at least claim 6 above.

6. Claims 12, 26, 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kariakin, PCT Publication No. WO 97/24699 (“Kariakin”) and Raterman et al.,

U.S. Patent No. 5,295,196 ("Rateman"), further in view of the article entitled "A Robust Content Based Digital Signature for Image Authentication" by Schneider et al. ("Schneider").

Referring to claim 12, see the discussion of at least claim 6 above. Kariakin further discloses that the string is based upon a concatenation (combination) of a plurality of numerical values derived from the images (page 3, lines 23-28).

Referring to claims 26, 54, see the rejection of at least claim 12 above.

7. Claims 28, 30, 35-39, 41, 63, 70, 74, 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kariakin, PCT Publication No. WO 97/24699 ("Kariakin") and Heck et al., U.S. Patent No. 5,845,002 ("Heck").

Referring to claim 28, Kariakin discloses a method for generating a string for use in determining whether a workpiece is valid, comprising:

- a. illuminating at least one portion of the workpiece with electromagnetic radiation from different illumination positions relative to the at least one portion (page 3, lines 23-28)
- b. generating one or more images of surface topographical appearance of at least one portion when the at least one portion is illuminated with the radiation at the different illumination positions (page 3, lines 23-28)
- c. generating the string based upon, at least in part, the one or more images (page 3, lines 23-28).

Kariakin further explains that the one or more images are **enhanced** prior to generating the string (page 20, lines 27-31). However, Kariakin fails to explicitly disclose the step of filtering the one or more images to emphasize selected higher spatial frequencies. The Examiner

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notes that filtering images to emphasize selected higher spatial frequencies (high-pass filtering) was exceedingly well known in the art and commonly performed in order to enhance an image. For example, Heck discloses filtering an image in order to emphasize selected higher spatial frequencies and attenuate lower frequencies (col. 12, lines 53-67).

Kariakin and Heck are combinable because they are both concerned with imaging surface topographical features of an object. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include the high-pass filtering step of Heck in the method of Kariakin. Note that the high-pass filtering process of Heck applied to the image of Kariakin would allow signal components representing taller and deeper surface topographical features to be distinguished from noise and signal components representing shorter and shallower surface topographical features, since only the high frequency data of the image is left remaining. The suggestion/motivation for the combination would have been to produce an output image having an enhanced signal level. Therefore, it would have been obvious to combine Kariakin with Heck to obtain the invention as specified in claim 28.

Referring to claim 30, see the discussion of at least claim 2 above.

Referring to claim 35, Kariakin further discloses that the different positions are at respective different oblique angles, and an identical azimuthal angle, relative to the at least one portion of the workpiece (page 20, lines 13-21 and figure 13).

Referring to claim 36, Kariakin and Heck do not explicitly disclose that the different positions are at respective different azimuthal angles, and an identical oblique angle, relative to the at least one portion of the workpiece. However, the Examiner notes that this would have

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been an obvious feature in order to illuminate the portion of the workpiece in a thorough manner, thereby obtaining an accurate image of topological surface.

Referring to claim 37, see the discussion of at least claim 9 above.

Referring to claim 38, see the discussion of at least claim 10 above.

Referring to claim 39, see the discussion of at least claim 11 above.

Referring to claim 41, see the discussion of at least claim 13 above.

Referring to claim 63, Heck further discloses that the filtering step includes filtering the one or more images to produce filtered images in which selected lower spatial frequencies are de-emphasized (col. 12, lines 53-67. Note that the high-pass filters will de-emphasize selected lower spatial frequencies).

Referring to claim 70, see the discussion of at least claim 68 above.

Referring to claim 74, see the discussion of at least claim 72 above.

Referring to claim 81, see the discussion of at least claim 77 above.

8. Claims 29, 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kariakin, PCT Publication No. WO 97/24699 ("Kariakin") and Heck et al., U.S. Patent No. 5,845,002 ("Heck"), further in view of Sansone, EP 0878778 A2 ("Sansone").

Referring to claim 29, see the discussion of at least claim 15 above.

Referring to claim 31, see the discussion of at least claim 3 above.

Referring to claim 32, see the discussion of at least claim 4 above.

Referring to claim 33, see the discussion of at least claim 5 above.

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9. Claims 34, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kariakin, PCT Publication No. WO 97/24699 ("Kariakin") and Heck et al., U.S. Patent No. 5,845,002 ("Heck"), further in view of the article entitled "A Robust Content Based Digital Signature for Image Authentication" by Schneider et al. ("Schneider").

Referring to claim 34, see the discussion of at least claim 6 above.

Referring to claim 40, see the discussion of at least claim 12 above.

10. Claims 56, 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kariakin, PCT Publication No. WO 97/24699 ("Kariakin") and Raterman et al., U.S. Patent No. 5,295,196 ("Raterman"), in view of the article entitled "A Robust Content Based Digital Signature for Image Authentication" by Schneider et al. ("Schneider"), further in view of Heck et al., U.S. Patent No. 5,845,002 ("Heck").

Referring to claim 56, see the discussions of at least claims 12 and 28 above.

Referring to claim 57, Heck further discloses that the one or more filtered images further de-emphasize selected lower spatial frequencies (col. 12, lines 53-67. Note that the high-pass filtering will de-emphasize selected lower spatial frequencies).

11. Claims 59-60, 62, 65-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kariakin, PCT Publication No. WO 97/24699 ("Kariakin"), Heck et al., U.S. Patent No. 5,845,002 ("Heck"), and Raterman et al., U.S. Patent No. 5,295,196 ("Raterman").

Referring to claims 59 and 65, see the discussion of at least claim 28 above.

Referring to claims 60 and 66, see the discussion of at least claim 57 above.

Referring to claim 62, see the discussion of at least claim 1 above.

12. Claims 76, 78, 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kariakin, PCT Publication No. WO 97/24699 ("Kariakin") and Raterman et al., U.S. Patent No. 5,295,196 ("Raterman"), further in view of Natarajan U.S. Patent No. 6,611,599 ("Natarajan").

Referring to claim 76, Kariakin and Raterman both fail to teach that the string is based at least in part, upon an averaging of portions of the one or more images. However, this feature was exceedingly well known in the art. For example, Natarajan teaches an indicium (watermark) comprising a string that is based at least in part upon an averaging of portions of one or more images (col. 7, lines 35-65).

Kariakin, Raterman, and Natarajan are all concerned with validating a workpiece. Natarajan's method allows changes in brightness or contrast without fooling the verification process (Natarajan, col. 3, lines 9-14). Therefore, it would have been obvious to modify the string of Kariakin and Raterman so that it is based at least in part upon an averaging of portions of the one or more images, as taught by Natarajan, in order to increase the accuracy of the verification/validation process.

Referring to claims 78, 82, see the rejection of at least claim 76 above.

13. Claim 80 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kariakin, PCT Publication No. WO 97/24699 ("Kariakin") and Heck et al., U.S. Patent No. 5,845,002 ("Heck"), further in view of Natarajan U.S. Patent No. 6,611,599 ("Natarajan").

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Referring to claim 80, see the discussion of at least claim 76 above.

Allowable Subject Matter

14. Claims 58, 61, 67 are allowed.

15. Claim 64 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Tullis U.S. Patent No. 5,686,720 discloses an optical scanner for obtaining an image of topographic features of a workpiece by simultaneously illuminating the workpiece from different illumination positions (col. 2, lines 36-50).

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Kim whose telephone number is 571-272-7421. The examiner can normally be reached on Mon thru Thurs 8:30am to 6pm and alternating Fri 9:30am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 571-272-7414. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ck
July 1, 2005


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